GLY1102 Darwin & Dinosaurs
Cladogram Activity

Objective: To learn how to construct a cladogram.

Materials: One set per group of two students
- Common Nail (20d 4 inch)
- Flat headed wood screw (10 x 2 inch)
- Flat headed sheet metal screw (10 x 2 inch)
- Flat headed stove bolt (10-24 x 2 inch)
- Flat headed machine screw with nut (10-24 x 2 inch)
- Round headed wood screw (10x1¼ inch)
- Round headed sheet metal screw(10 x 1¼ inch)
- Round headed machine screw with nut (10-32 x 1½ inch)

Background:

Cladistics- similar characteristics that come from a common ancestor are used to divide organisms into groups.

Primitive characters- are those attributes of an organism which all members of the group possess. Primitive characters are of no use in analyzing the relationship of organisms within a particular group.

Derived Characters- are advanced traits which only appear in some members of the group. Cladistics is based on the assumption that the appearance of derived characters gives clues to evolutionary relationships.

Cladogram- diagram that can be drawn from examining suites of primitive and derived characters, which illuminate the evolutionary relationships between the groups.

Procedure:
1. Layout your set of hardware organisms and match each one to the materials list, make sure you have all organisms listed.
2. List all characteristic you see for each organism.
3. Determine the primitive and derived characters.
   a. Look for characters that are only found in portion of the group to determine the derived characters.
4. Choose which derived characters to use in the matrix below.
   a. As the scientist you must determine which derived characters are more important in the evolutionary relationships between the organisms.
   b. List the characters in order from more inclusive to less inclusive in the character list from 1-5 (one is the most inclusive and 5 is the least inclusive) on the next page.

5. Fill in the matrix with 0 if the organism does not possess the character and 1 if the organism does possess the character.
6. Once your matrix is complete create the cladogram.

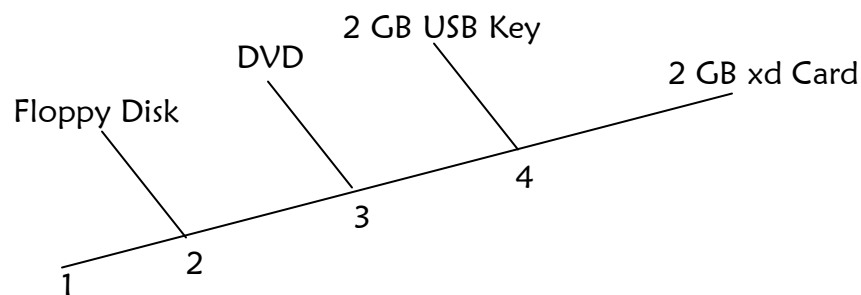|	Characters				
Organism	1	2	3	4	5

Characteristics: no (o), yes (1)
1.

2.

3.

4.

5.

6.

Questions:
1. Compare your cladogram with others in the class. Explain why all the cladograms do not look the same but still can be correct?
2. What are the advantages and disadvantages of cladistics?
3. Choose 4 everyday objects from a group and generate a cladogram. (Examples of groups would be automobiles, things with engines, hair care products, cleaning supplies, etc.)

Example (Do not use the same example): computer data storage devices- Floppy disk, DVD, 2 GB USB key, 2 GB xd card

2 GB USB Key

DVD

2 GB xd Card

Floppy Disk

4

3

2

1

	Characters			
	1	**2**	**3**	**4**
Floppy disk	1	0	0	0
DVD	1	1	0	0
USB key	1	1	1	0
xd Card	1	1	1	1

Characteristics:
1. Stores computer data
2. Storage capacity more than 800 kb
3. Does not spin while writing data onto storage medium
4. Smaller than 1 inch